ABSTRACT

The joint rotational angles of joints 9, 11 and 13 of each leg 2 of a bipedal walking body 1 are detected to grasp the positions/postures of the corresponding rigid bodies 10, 12 and 14 of each leg 2 on a leg plane passing the joints 9, 11 and 13 of each leg 2. At the same time, the acceleration of a reference point (the origin of a body coordinate system BC) of the bipedal walking body 1, the floor reaction force acting on each leg 2 and the position of an acting point thereof are grasped in terms of three-dimensional amounts. Two-dimensional amounts obtained by projecting the acceleration, the floor reaction force and the position of the acting point thereof, and the positions/postures of the corresponding rigid bodies of each 2 onto the leg plane are used to estimate the moments acting on joints of each leg on the basis of an inverse dynamic model. The stability of the estimated values of joint moments can be improved while securing the accuracy of estimating the joint moments in the bending and stretching directions of each leg, considering three-dimensional motions of the bipedal walking body.